



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

INVENTOR: Dillis V. Allen)
INVENTION: AIRCRAFT INTEGRATED) EXAMINER: Lulit Semunegus
NON-LETHAL WEAPON)
SYSTEM - AINLWS) ART UNIT: 3641
SERIAL NO: 09/955,898)
FILED: 9-19-01)

U.S. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

APPENDIX TO BRIEF ON APPEAL

CLAIMS ON APPEAL

1. An integrated NLW system for aircraft, having a cockpit separated from a cabin by a cockpit bulkhead, comprising: a seal system for the bulkhead impervious to the selected NLW material in the cabin, and an NLW supply system for the cabin.

2. An integrated NLW system for aircraft as defined in Claim 1, including a first air conditioning system for the cockpit, and a second air conditioning system for the cabin.

3. An integrated NLW system for aircraft as defined in Claim 1, and an exhaust system E for cabin NLW material.

4. An integrated NLW system for aircraft as defined in Claim 3, and an interior master control IMC for activating the NLW supply system and for thereafter terminating the S and activating the exhaust system E.

5. An integrated NLW system for aircraft having a cockpit separated from the cabin by a bulkhead, comprising: a first air-conditioning system for the cockpit, a second air-conditioning system for the cabin that does not exhaust cabin gas or material into the cockpit, an NLW material supply system for the cabin, and a seal system for the cockpit bulkhead to prevent the entry of significant amounts of NLW material into the cockpit from the cabin.

6. An integrated NLW system for aircraft as defined in Claim 5, an exhaust system for exhausting NLW material from the cabin without entry to the cockpit, and a control IMC for initiating the NLW supply system and for thereafter terminating the NLW supply system and initiating the exhaust system.

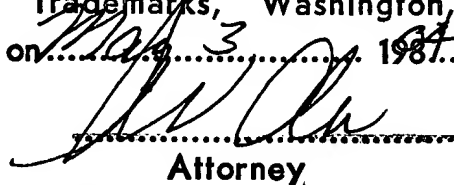
Respectfully submitted,



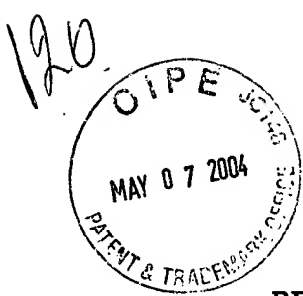
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Attorney

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Date



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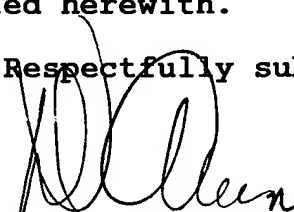
TRANSMITTAL LETTER

Honorable Sir:

Applicant, under the provisions of 37 C.F.R. 1.192, is filing herewith, in triplicate, a Brief on Appeal and an Appendix to the Brief on Appeal.

Applicant's check in the amount of \$165 for filing the Brief on Appeal is submitted herewith.

Respectfully submitted,


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Attorney

May 3, 2004
Date



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BRIEF ON APPEAL

Honorable Sir:

I. INTRODUCTION:

The present invention relates to an aircraft integrated non-lethal weapon system for commercial aircraft with a bulkhead sealed with respect to the enabled NLW material between the cockpit and the passenger cabin. The cockpit has an air-conditioning system separate from the cabin air-conditioning system. The non-lethal weapon NLW material is injected into the cabin by an NLW supply system, and the cabin is exhausted, after securement, by an NLW exhaust system and the cabin is returned to the cabin air system.

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The sole rejection of the six Claims in the application is based upon a combination of an Israeli El Al mechanically reinforced cockpit door, a prior art patent (Birch), showing NLW injected into a ground located aircraft for immobilizing hijackers, and another prior art reference (Lockheed) showing a fire smoke evacuation system.

There is no teaching in any of these patents for sealing the cockpit bulkhead from NLW material, such as gas. There is no teaching in any of these patents for separate air systems for the cockpit and the passenger area, and in short, even if these systems were combinable, the resulting system would be inoperable on the ground or in the air because of cockpit contamination.

II. REAL PARTY IN INTEREST:

The real party in interest in this application is the inventor, Dillis V. Allen.

III. RELATED APPEALS AND INTERFERENCES:

There are no related appeals or interferences.

IV. STATUS OF THE CLAIMS:

Claims 1 and 5 are independent Claims; Claims 2, 3, and 4 depend directly or indirectly from Claim 1, while Claim 6 depends from Claim 5. All of these Claims are original Claims and no Claims have been canceled or amended.

V. STATUS OF AMENDMENTS:

The Amendments filed on December 12, 2002, and August 4, 2003, are actually mistitled because neither contains any amendments to the specification nor Claims.

VI. SUMMARY OF THE INVENTION:

An increase in bulkhead strength and security alone(referred to in applied *Washington Post* article) will not be completely effective because of the threat of bombs or the explosion of bombs in the cabin compartment and the injury or assassination of passengers and flight attendants in the cabin compartment which may prompt an egress of cockpit personnel in an attempt to aid the problems in the cabin. This exposes the cockpit to take-over by the terrorists-hijackers.

It is apparent that non-lethal weapon systems provide the best solution to the aircraft hijacking problem(p.3,l.6+).

The non-lethal weapon is an effective trade off between lethality and effectiveness. The ideal weapon must incapacitate the threat to the extent that it is not a threat anymore. This requires a careful balance between using too much force -- which would reassert the weapon as lethal -- or too little, thus only endangering the operator. To be an effective alternative to deadly force, the traditional mechanism for the soldier or marshal, the ideal non-lethal weapon must first meet certain criteria(p.3,l.12+).

A type of foam that immobilizes without being sticky is super foam. Dispensed from a portable generator type device with a 275 gallon tank, the foam covers an area about 200 feet long by 20 feet wide and 4 feet high. the foam is often laced with irritants and its primary purpose is to serve as a barrier. While it looks like soap suds, the consistency is denser and does not blow away in the wind.

Another weapon that would be of some use is CS gas. Designed to create a diversion long enough to get in better positions to kill the terrorists, the CS gas does not have any lasting effect on the hostages.

In accordance with the present invention, an aircraft integrated non-lethal weapon system AINLWS is provided for commercial aircraft with a sealed bulkhead between the cockpit in the cabin. The cockpit has an air-conditioning system CAS(30) separate from the cabin air-conditioning system PAS(32). A non-lethal weapon material is injected into the cabin by an NLW supply system(34), and the cabin is exhausted after hijacker securement, by an NLW exhaust system(36) and returned to the normal cabin air system.

Non-lethal weapon NLW systems provide the best opportunity to minimize on-board hijacking because if designed properly, can disable the hijacker with reversible effects on the passengers, and after hijacker capture and securement, quickly return the cabin environment to normal, NLW free, minimizing any residual effects on the passengers.

The cabin passenger environment because completely enveloped, provides an ideal environment for the use of certain NLW materials because the cabin envelope confines those

materials to the cabin as opposed to an outdoor or large building environment where the NLW materials would be directed to non-effective areas, thus requiring far greater quantities of the NLW materials(p.14,l.16). Furthermore, the quantification of the interior cabin volume by the NLW system designer, according to the present invention, would be a relatively easy calculation. Furthermore, this fixed volume environment for the NLW materials enables the quick and rapid exhaustion of the NLW materials after securement of the hijackers to minimize disabling effects on the passengers. Of course, the materials selected as NLW materials for the present system must create a balance between minimizing passenger injury while providing sufficient effect to immobilize hijackers sufficiently to permit rapid and safe capture.

NLW systems, in a broader perspective, include stun guns, chemical weapons, CS tear gas, sleeping gas, sticky foam, nets, super lubricants, super foam, radio frequency weapons, laser focusers, ultrasound emitters, microwave pulse generators, and many others.

The present invention defines non-lethal material NLWM as any substance presently, or in the future, used in NLW technology that when used in an aircraft having an un-

sealed bulkhead separating the cockpit from the cabin may when initiated in the cabin, penetrate the bulkhead and enter the cockpit(p.15,l.18). This definition would include gases, chemicals, sprays, foams, without any specific limitation to this list. It would exclude flame injectors, solid projectiles, and structural damaging explosives, as well as obviously any substance or object that would be lethal to the major portion of the passenger population in the aircraft.

The present AINLWS includes a separate cockpit air system CAS(30) that operates in the S-mode to maintain cockpit environment during cabin assault.

When activated by an interior master control(38), the NLW material supply injects NLW material into the cabin disabling both passengers and terrorists-hijackers. After the hijackers have been disabled sufficiently, which could be viewed by a video camera from the cockpit area for example, the cabin is entered by cockpit marshals or other cockpit personnel and the terrorists-hijackers bound or otherwise confined(p.16,l.10). Thereafter, the master control is activated to initiate the NLW material exhaust sys-

tem to exhaust the cabin of NLW material and return the cabin environment under the control of the normal cabin air system PAS.

VII. ISSUES ON APPEAL:

Are Claims 1 to 6 properly rejected under 35 USC 103 over The Washington Post Article, the Birch, UK Patent Application(GB2 183 582 A) and the Bruensicke, U.S. Patent No. 4,552,325?

(a) Is there a suggestion in the art to combine the teachings of The Washington Post Article, the Birch, UK Patent Application(GB2 183 582A) and the Bruensicke, U.S. Patent No. 4,552,325, in the manner suggested by the Examiner?

(b) Does a combination of the teachings of The Washington Post Article, the Birch, UK Patent Application(GB2 183 582 A) and the Bruensicke, U.S. Patent No. 4,552,325, even as suggested by the Examiner, render obvious any of Claims 1 to 6, or does it result in a different system?

VIII. GROUPING OF THE CLAIMS:

There is a single rejection of all six Claims, combining the teachings of The Washington Post Article, the Birch, UK Patent Application(GB2 183 582A) and the Bruensicke, U.S. Patent No. 4,552,325.

However, Claims 1, 2, and 5 do not contain the NLW exhaust system, so these Claims are not believed to stand or fall together. Thus, Claims 1, 2, and 5 represent one group, and Claims 3, 4, and 6 represent another. The addition of the exhaust system to the claimed invention is distinct because the removal of the NLW material from the passenger cabin not only lessens the injury to the passengers, but also allows the cockpit personnel to safely enter the passenger area to subdue and secure the terrorists.

IX. ARGUMENT:

In short, there is simply no suggestion in The Washington Post article, the Birch GB2 183 582A, nor the Bruensicke, U.S. Patent No. 4,552,325, for a non-lethal weapon system for a flying aircraft, much less the specific one recited in the Claims which deals with the injection of NLW solely into the cabin sealed from the cockpit.

Claims 1-6 have been rejected under 35 USC 103(a) as being unpatentable over The Washington Post article, dated September 13, 2001, in view of the Bruensicke, U.S. Patent No. 4,552,325, in view of Birch, GB 2, 183,582, with the following statement:

"In regards to claim 1, The Washington Post teaches that Israeli national airline, El Al has been using the tactic of sealing off a cockpit door before the September 11, 2001 tragedy (page 2, paragraph 5 and 6), where the seal system is impervious to any material (page 2, 6th paragraph).

Birch teaches a non-lethal weapon system for an aircraft (page 2, lines 21-23).

As to claim 2, Bruensicke teaches a first air conditioning system for the cockpit and a second air conditioning system for the cabin (col. 3, lines 56-66).

As to claims 3 and 5, Bruensicke teaches an exhaust system for cabin material where the exhaust system can be used for any kind of emergency for removing unwanted cabin material (abstract).

As to claims 4 and 6, Bruensicke teaches an interior master control, IMC, for activating a supply system and for terminating the supply and activating the exhaust system (col. 2, lines 37-46).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the teachings of Bruensicke, Birch and Israeli's El Al tactic to protect the pilots from being affected by NLW and also it would have been obvious to add an exhaust system as taught by Bruensicke to any aircraft to clean up any material (smoke-non-lethal or lethal) from the cabin."

Even if the Examiner's combination of The Washington Post article, Birch, and Bruensicke is proper, the resulting system would not be a system that injects NLW into the cabin sealed from the cockpit area.

The Birch U.K. Patent Application GB 2 183 582 A, published June 10, 1987, does in fact relate to a non-lethal weapon system for aircraft, but the Board should note initially that there are no drawings in this application so it is difficult to determine how such a system is arranged and constructed. The more glaring deficiency, however, is that the Birch system can only be used on the ground because it disables the crew, as well as the passengers. Note on page 1, column 2, beginning at line 89: "The faculties of passengers and aircrew are likely also to be indiscriminately affected but since it is not likely that passengers and aircrew will need to take an intelligent action at this time, such temporary impairment, inconvenience and possible discomfort, may be regarded by those concerned as a small price to pay to avoid high risk of personal injury or loss of life whilst hi-jackers continue to be in control of the aircraft."

Note also in the first full paragraph in column 1 of page 2, it is stated: "Provision may be made for storing such substance or substances under secure conditions on board the aircraft so that the method of the present invention can be brought into use without necessity for security personnel to approach the aircraft."

Obviously, security personnel can only approach the aircraft when the aircraft is on the ground. Thus, the Birch system is totally inoperable as an in-air disablement system, and the Birch system has only a very limited use since most hijackings occur in the air and not on the ground.

The Washington Post article refers in a very general way to the Israeli El Al cockpits which have, for many years, been "sealed" off from the cabin area. This prior art is described in the second full paragraph of the Background of the Present Invention beginning on page 2. Thus, the reinforcement of the egress and ingress to the cockpit is not the present invention. The Washington Post article states: "El Al cockpits are sealed off by two virtually impenetrable doors, which are not opened during

flight". This does not mean that they are sealed from NLW materials but merely they are sealed from mechanical penetration by a would-be hijacker or terrorist.

The Bruensicke system entitled "Emergency Smoke Disposal System for Pressurized Aircraft" deals solely with the evacuation of smoke from an aircraft fuselage, and it may be in the cabin area or the cockpit, caused by fire in the aircraft. There is not one word in the Bruensicke patent about the injection of non-lethal weapon materials into the cabin or the evacuation of non-lethal weapons from the cabin, although it might be possible that this system could be used with a few non-lethal weapon materials.

So even if one combines Birch and Bruensicke with The Washington Post article, one simply has an aircraft with a mechanically reinforced cockpit door, a smoke evacuation system for the aircraft, and an NLW injector. This combination results in nothing more, and it simply does not anticipate any of the Claims in the present application. The cockpit would not be isolated because there is no teaching that the El Al bulkhead is sealed around its perimeter from gases, for example, and if not, the whole system is destroyed and purposeless.

Furthermore, while the Examiner does not describe exactly how Birch could be used to modify The Washington Post teachings or the Bruensicke teachings, applicant suggests that it is improper to combine these teachings to anticipate the present invention mainly because Birch teaches a system that can only be used on the ground.

Claim 1, for example, recites "a seal system for the bulkhead impervious to the selected NLW material in the cabin". While the El Al aircraft has reinforced cockpit doors, there is no suggestion in any article that applicant has read that they are impervious to any NLW materials. In other words, it could be, in the El Al system, even though the doors are strengthened, that the periphery of the bulkhead is not impervious to gas and foam materials, for example.

Next, Claim 1 recites "an NLW supply system for the cabin". It is quite clear that neither The Washington Post article nor the Bruensicke patent show any NLW supply system.

The Examiner suggests that with respect to Claim 2, "Bruensicke teaches a first air conditioning system for the cockpit, and a second air conditioning system for the cabin (col. 3, lines 56-66)." This is simply incorrect even

though it does not correct the basic combination of The Washington Post article and Bruensicke. Bruensicke simply does not teach separate air conditioning systems for the cockpit and cabin.

The Bruensicke patent states beginning at column 3, line 52:

"In addition to maintaining such a differential pressurization between the cabin and the external airstream, the aircraft's environmental control system is also required to control temperature within a normal comfort range and also to introduce fresh air into the cabin. These various functions are conventionally handled by redundant air conditioning packs, each driven by intermediate pressure(45 psig)(3.2 kg/cm²) engine bleed air. Each air conditioning pack thereby has the capability to provide an independent source of pressurized air at a predetermined temperature and flow rate. The conditioned air is mixed in an air distribution manifold and introduced into the various cabin zones through air outlet grilles in the cabin ceiling so as to produce a gentle circulation pattern within the cabin. Air is optionally also introduced through individual air outlets directed at particular seat positions."

It is quite clear from this discussion that the Bruensicke air conditioning systems are redundant; that is, they are redundant in the sense that both provide air conditioning systems for the same space and not different spaces as suggested by the Examiner.

The Examiner states at the end of paragraph 1 of the Office Action that "Bruensicke is used to teach that having different air-conditioning systems is known in the art as taught in col.3, lines 63-64, where Bruensicke teaches an air being distributed into various cabin zones which teaches that having air-conditioning duct system separated by zones is well known in the art."

This is only partly correct. In the Bruensicke system, there are separate cabins, and the separate cabins are fed with air-conditioned air, but not different air. The air distributed by Bruensicke(Lockheed Corporation) is the same for all cabins, but again these are merely passenger cabins and Bruensicke is completely silent about the cockpit area. More importantly, all the air in the cabin comes from a common source in Bruensicke. Both the primary and redundant secondary air systems in Bruensicke feed air to a common plenum before being distributed to the individual nozzles in the different cabins. This is quite clear from the statement beginning in col.3, line 62, in Bruensicke: "The conditioned air is mixed in an air distribution manifold and introduced into the various cabin

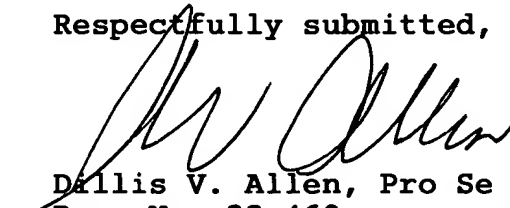
zones through air outlet grilles in the cabin ceiling so as to produce a gentle circulation pattern within the cabin." (emphasis added).

In summary, applicant submits that there is no suggestion of combining The Washington Post article, or the El Al bulkhead system with Birch because the NLW would leak into the cockpit and destroy the purpose of this system.

There is no suggestion for combining Bruensicke with The Washington Post Article and Birch system because the Bruensicke system is for the purpose of moving fire smoke from the cabin, and as a practical matter, would only work on the ground and not in the air. Secondly, even if these teachings are combined, the system would be inoperable because the cockpit would be contaminated.

In conclusion, it is respectfully requested that the Board of Patent Appeals and Interferences reverse the Examiner's rejection of Claims 1 to 6 under 35 USC 103, and remand the case to the Examiner for further proceedings.

Respectfully submitted,



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W. Allen.....
Attorney

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